

## PATENT SPECIFICATION

634,889



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## COMPLETE SPECIFICATION.

## Connecting Clip for Constructions consisting of Tubes or Bars.

We, PETER KARL NIKOLAUS SAUER, a German Citizen of Bürs, near Bludenz, Austria, and ALLRAUM A/G., a Joint Stock Company organised under the laws of Switzerland, of 5 Oberer Graben 22, St. Gallen, Switzerland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a clip for connecting constructions consisting of tubes or solid bars and is particularly useful for tubular furniture, but can be used also with 15 advantage for other purposes, e.g., for business or exhibition shelves, tent frames, lattice-work and also for building purposes, such as collapsible houses, etc. Solid bars connected by the clips may also be used instead of 20 tubes. As a rule the clips are intended for use with tubes of round or oval cross section but the invention is also applicable to tubes or bars of quadrangular or polygonal cross section.

25 Means for connecting such bars or tubes or both for the aforesaid purpose, which fulfil all requirements in respect of strength, simplicity of manufacture and application, but at the same time are of pleasing appearance, 30 have not been known hitherto. In the attempts which have been made to conceal the means of connection as much as possible at the points where they are connected, these means have in many cases been placed in 35 the interior of the tubes, so that owing to the small amount of space which is available and defective accessibility complicated constructions, which at the same time are not very strong, have resulted.

40 The clip according to the present invention is distinguished by the fact that the halves thereof are connected to each other by at least one bolt, the cylindrical stem or shank of which is widened at one end and has on 45 the other end a radial projection which, when the bolt is introduced axially into an opening passing through the halves of the clip

[Price 2/-]

passes through it and is brought into the locking position by turning the bolt. In this way a particularly simple means for 50 quickly and reliably and detachably connecting the halves of the clip is provided, while a simple form of the clip is obtained at the same time. The enlarged part and the projection on the stem or shank of the bolt are 55 preferably sunk in recesses in the halves of the clip so that these parts shall not project beyond the clip and a pleasing appearance thereof is obtained.

The invention is shown by way of example 60 in the accompanying drawing, in which:—

Figs. 1 and 2 are a longitudinal section and a plan view of a clip for the connection of parallel tubes.

Fig. 3 is a cross section on the line III— 65 III of Fig. 1.

Figs. 4, 5 and 6 show in perspective a clip for the connection of tubes which cross each other, Figs. 4 and 5 showing the several 70 halves of the clip and Fig. 6 the combined 70 halves.

Figs. 7 to 9 show a clip for the connection of tubes lying at right angles to each other, Figs. 7 and 8 showing one half of the clip in perspective and the clip when put to- 75 gether, while Fig. 9 is a cross section through the clip shown in Fig. 8.

Fig. 10 is a similar cross section through a modified form of construction, and

Fig. 11 shows in perspective a bolt for the 80 clips shown in Figs. 7 to 10.

The clip shown in Fig. 1 is divided into two halves along the plane 1. The two sleeves 2 surround two parallel tubes which are prevented from moving by lugs 3 which 85 enter holes in the tubes. The bolt for connecting the two halves of the clip is mounted between both sleeves 2. Said bolt consists of a round stem or shank 4 and an upper wider and a lower narrower part 5 and 6 90 respectively which run parallel with each other in a radial direction. The two halves of the clip are provided between the sleeves 2, with a bore for the reception of the stem

Price 25p

or shank 4 of the bolt, and adjoining said bore is a lateral slot 7. The bolt 4, 5, 6 is introduced into the bore in the direction of the axis of the stem or shank 4, the lower part 6 passing through the slot 7. If the bolt 4, 5, 6 be then turned through an angle of  $90^\circ$  into the position shown in Fig. 2, both the halves of the clip will be connected to each other by the parts 5, 6 after the manner of a clamp. The parts 5, 6 lie in quadrangular recesses 8, 9 sunk in the clip. Whereas the periphery of the lower part 6 must be adapted to the slot 7, the upper part 8 may naturally be of a different shape, as its function is merely to form an enlargement which projects beyond the stem or shank 4 and projects outwards over the periphery of the slot 7.

The clip shown in Figs. 4, 5 and 6 serves to connect two tubes crossing and therefore lying in different planes. The two halves 11, 12 of the clip (Figs. 4 and 5) each consist of two sleeve halves 13 and 14 respectively with the bore and slot 7 lying between them in a part 15. In this case the division of the clip takes place in two planes which are at right angles to each other. A surface 16 on the half 11 of the clip at right angles to these planes forms a stop for the part 15 of the half 12. In the drawing the recess 17 for the reception of the part 5 of the bolt shown in Figs. 1 to 3 can also be seen.

The clip shown in Figs. 7 to 9 serve for the connection of tubes of oval cross section. As shown in Fig. 8, the two halves 18 and 19 of the clip form two sleeves 20, 21 which surround the tubes to be connected and the axes of which are at right angles to each other. In Fig. 9 one tube 22 is visible. Both halves 18 and 19 are provided internally with bosses 23 which enter openings in the tubes and thereby prevent any movement or twisting between the tubes and the clip.

The connection of both halves 18, 19 is effected by a bolt, which has a cylindrical stem or shank 24 on one end of which two radially projecting lugs 25 are provided. On the other end is formed a cylindrical collar 26, which is provided with a slot for the reception of a screwdriver. The bosses 23 on the halves 18, 19 of the clips are provided with openings 28, the contour of which corresponds to the stem or shank 24 and the

lugs 25. As shown in Fig. 9, the halves 18, 19 are provided with recesses on their outside, in which the lugs 25 and the collar 26 are sunk.

Each bolt is introduced axially into the openings 28 and then turned by means of a screwdriver through an angle of  $90^\circ$  so that the halves 18, 19 are clamped between the collar 26 on the one hand and the lugs 25 on the other hand and connected with each other in this way. As shown in Fig. 9, the inner end faces 29 of the opposing bosses 23 are in contact whereby the strength of the connection is increased in an advantageous manner. The bosses 23 may however be shorter, so that they do not touch each other.

Fig. 10 shows the same connection as used on a tube of circular cross section.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Clip for connecting constructions consisting of tubes or bars characterised by the fact that the halves of the clip are united by at least one bolt, the cylindrical stem or shank of which has at one end an enlarged portion and on the other end a radial projection which latter, when the bolt is introduced axially into an opening traversing the halves of the clip passes through this opening and by turning the bolt is brought into the locking position.

2. Connecting clip according to Claim 1, characterised by the fact that the enlargement and the projection on the stem or shank of the bolt are sunk in recesses in the halves of the clip.

3. Connecting clip according to Claim 1, characterised by the fact that the bolt is mounted in bosses which are provided on the inside of the halves of the clip and enter recesses in the tubes or bars.

4. Connecting clip according to Claim 3, characterised by the fact that the opposing bosses on the halves of the clip contact each other.

Dated this 30th day of September, 1947.

For the Applicants:

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Chartered Patent Agents,

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[This Drawing is a reproduction of the Original on a reduced scale.]

FIG. 1

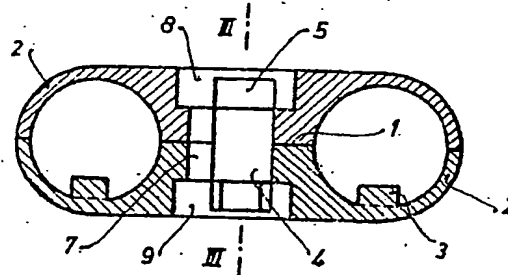


FIG. 3

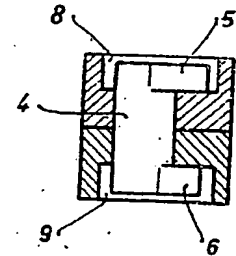


FIG. 2

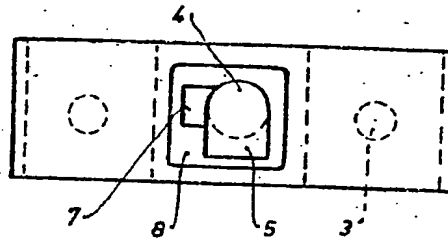


FIG. 5

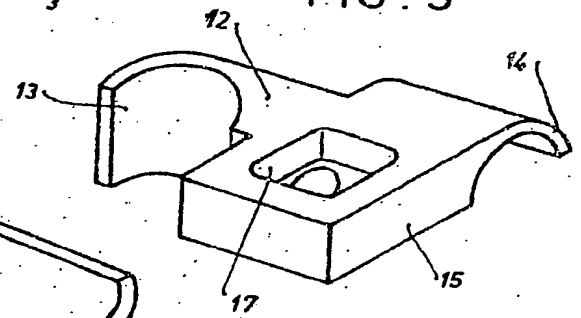


FIG. 4

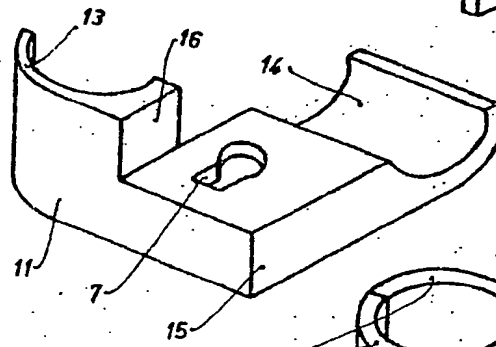
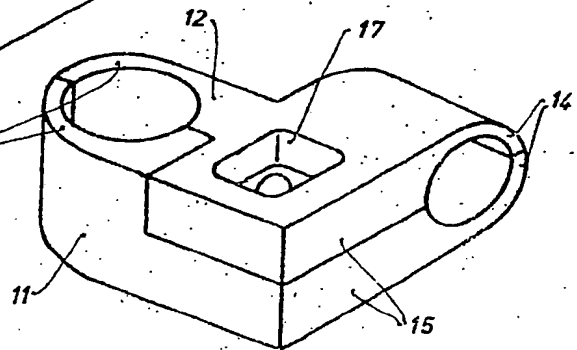


FIG. 6



3 3

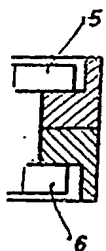


FIG. 7

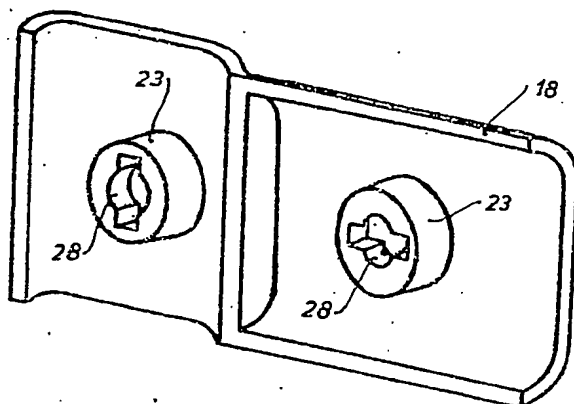


FIG. 9

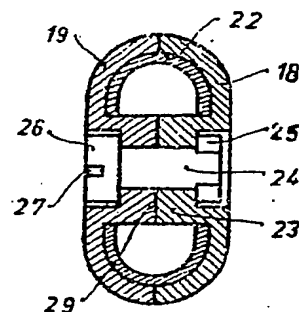


FIG. 8

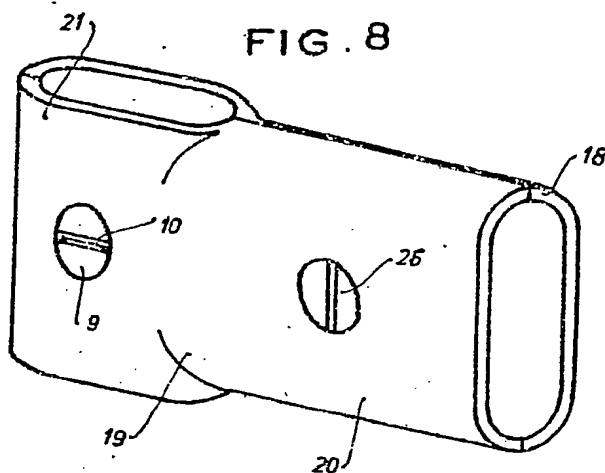


FIG. 10

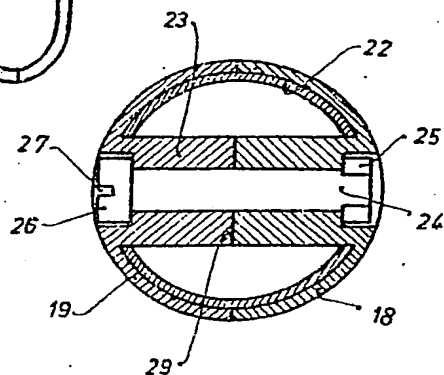


FIG. 11

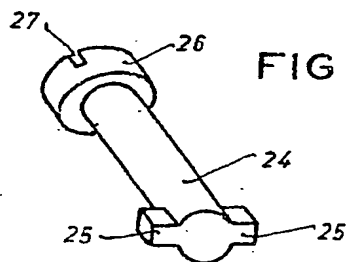


FIG. 1

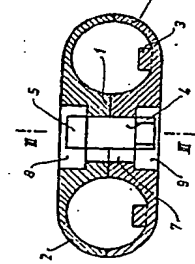


FIG. 3

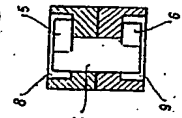


FIG. 2

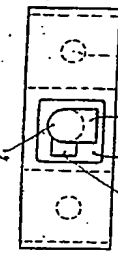


FIG. 5

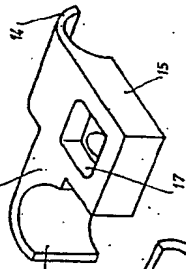


FIG. 4



FIG. 6

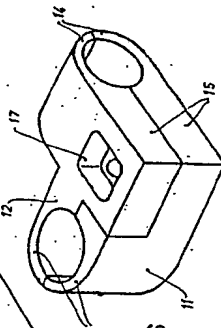


FIG. 7

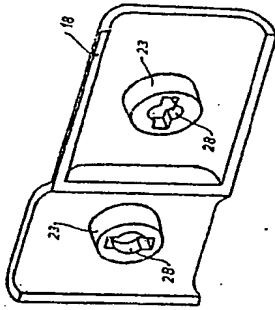


FIG. 9

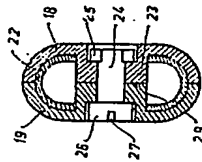


FIG. 8

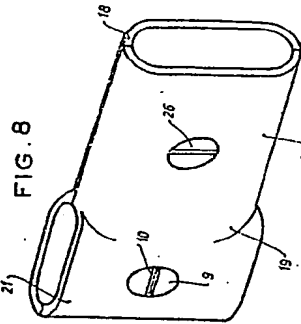


FIG. 10

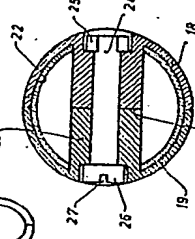
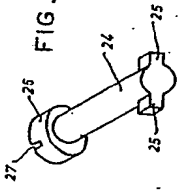


FIG. 11



[This Drawing is a reproduction of the Original on a reduced scale]